FACULTY OF TECHNOLOGY AND ENGINEERING

DEVANG PATEL INSTITUTE OF ADVANCE TECHNOLOGY AND RESEARCH

DEPARTMENT OF COMPUTER ENGINEERING

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LAB MANUAL

CE266: SOFTWARE ENGINEERING

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PRACTICAL – 5

AIM:

Calculate cost estimation for the project using FP calculation and COCOMO model. After manual calculation use COSTAR/SYSTEM STAR Tool to calculate and explore other parameters for estimation of cost of your project.

External Inputs (EI):

1. Adding a new supplier's information to the system.
2. Recording a purchase of raw materials for inventory.
3. Updating inventory details of a raw material item (e.g., changing quantity or price).
4. Entering information about a promotional event organized by the restaurant.
5. Modifying existing sales records (e.g., correcting sales amounts or updating customer details).
6. Adding information about a new staff member in the restaurant.
7. Recording information about a maintenance issue reported by a staff member.
8. Updating inventory details (e.g., adding new items or updating quantities).
9. Recording feedback from customers about food quality and service.
10. Adding information about a new menu item or promotion.

Total External Inputs (EI) = 10

External Outputs (EO):

1. Generating reports on inventory usage statistics for a given time period.

2. Printing receipts for sales transactions.

3. Sending email notifications to customers acknowledging their purchases.

4. Displaying a list of upcoming promotions or special events related to the inventory management system.

5. Exporting sales data to be used in accounting software.

6. Sending reminders to staff about upcoming inventory deliveries or stock updates.

7. Displaying a summary of recent sales activities on the inventory management system's dashboard.

8. Printing monthly reports for inventory analysis and forecasting.

9. Predictive analysis of food item (burger) sales with specific time and date parameters.

10. Generating reports on ingredient usage for burger production and sales.

Total External Outputs (EO) = 10

External Inquiries (EQ):

1. Checking the status of an inventory order.

2. Inquiring about the schedule of product deliveries.

3. Checking the availability of warehouse space for storing inventory.

4. Verifying the order history of a customer.

5. Inquiring about the eligibility criteria for discounts or promotions on inventory items.

6. Checking the availability of specific raw materials for production.

7. Verifying the status of a sales report.

8. Inquiring about the predictive analysis results for burger sales at specific times and dates.

Total External Inquiries (EQ) = 8

Internal Logical Files (ILF):

1. Database storing supplier information (e.g., name, contact details, order history).

2. Database maintaining employee details (e.g., employment status, contact information).

3. Database storing information about sales events and promotions.

4. Database tracking inventory items (e.g., raw materials, finished products, quantities).

5. Database for recording sales transactions and generating sales reports.

Total Internal Logical Files (ILF) = 5

External Interface Files (EIF):

1. Integration with a payment gateway for processing sales transactions.

2. Interface with an email service for sending order confirmations and receipts.

3. Integration with a data analysis platform for conducting predictive analysis on inventory usage and sales trends.

Total External Interface Files (EIF) = 3

Now, let's calculate the total function points:

Total FP = (EI * weight of EI) + (EO * weight of EO) + (EQ * weight of EQ) + (ILF * weight of ILF) + (EIF * weight of EIF)

Total FP = (10 * 4) + (10 * 5) + (8 * 4) + (5 * 10) + (3 * 7)

= 40 + 50 + 32 + 50 + 21

= 193

So, the estimated size of the Inventory management system with predictive analysis in function points is 193.

COCOMO Calculation:

Let's assume the estimated lines of code (LOC) for the project based on the function points is 20,000.

Now, we'll use COCOMO to estimate effort and schedule. Let's assume we're using the Basic COCOMO model.

 1 FP=50 lines

Size (LOC): 9650

Mode: Basic

Using COCOMO, we get:

Effort (in person-months): $E = a * (Size)^b * EAF$

Schedule (in months): $T = c * (Effort)^d$

Here, constants a, b, c, and d are specific to the Intermediate COCOMO model. Let's assume their values as follows:

a = 2.4   b = 1.05   c = 2.5   d = 0.38

And let's assume the Effort Adjustment Factor (EAF) is 1.0 (no adjustments).

Now, plug the values into the formulas:

Effort = 2.4 + (9.6)^1.05 * 1.0 ≈ 13.14 person-months

tdev= 2.5 * (13.14)^0.38 ≈ 15.94 months

1 month cost=25000

Estimated cost=25000*16=400000

So, according to the COCOMO model, the estimated effort required for the project is approximately 13.14 person-months, and the estimated schedule is approximately 15.94 months.